

"THE MOUNT SAVAGE IRON WORKS."

H Redford Aldridge May 1, 1929

It is not commonly known to the people living in this rightfully named Iron Age, that the state of Maryland was one of the first and in fact, a leading producer of iron during her early history. From Colonial days on up to the Civil War, Maryland iron ranked high among that produced by the various states. Scattered throughout the state were a number of small furnaces capable of producing an average of 3000 tons of iron annually. A pitifully small amount when compared with the furnaces of the present day; yet a wonderful feat when the crudeness of operation is considered. Several factors combined to cause the death of the iron industry in this state.

In the first place, these furnaces depended on small deposits of ore located at many points in the state for their supply. These ores were, for the most part, poor in quality and of an insufficient quantity to sustain any large scale operations. With the discovery of the ore deposits around Lake Superior, came the death of the struggling industry and the end of a dream, a dream of successful manufacture in the face of overpowering odds. Poor transportation, slow and tedious operation, and small quantity production all aided in this downfall. It is with one of the larger and perhaps the most historic of these industries that this paper deals.



## HISTORY.

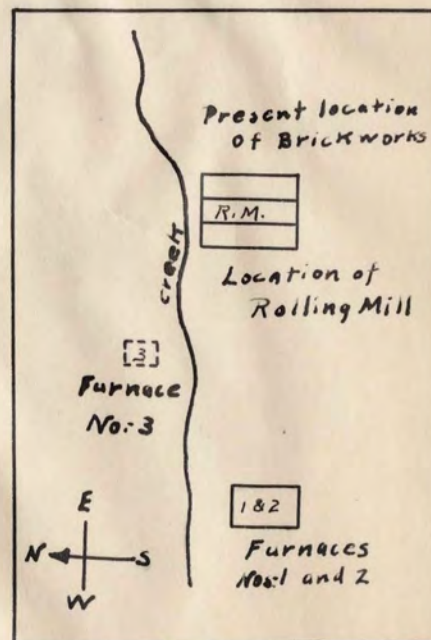
A history of the iron industry at Mount Savage which is located in Allegany County, must be divided between two branches, each one separate and distinct in its operation; but both being operated by one company. These two divisions were; the Blast Furnaces, and the Rolling Mill.

It was in the year 1834 that the first of the furnaces was erected. A second followed almost immediately and a few years later construction on a third was started. These furnaces were originally owned and operated by an English concern but later became the property of the "Mount Savage Iron Works" an essentially American company. It was this former concern who also erected the Rolling Mill, it, too, being taken over by the latter. This company became the operatives in 1847 upon the failure of the original concern. The history and operation of the mill itself will be treated later, since the furnaces were the basis of the industry.

The two older furnaces were located on the south side of the creek which divides the town of Mount Savage. On the opposite side, and some distance to the east, the third was situated. The ruins of the older furnaces are still standing; but of the last, not a trace can be found. Later operations of the last of the companies who owned these works and



who had in the meantime commenced the manufacture of fire-brick, buried these ruins under a dump of clay. It has been during the last few years, alone, that excavations have brought them again to view. The following photographs and sketch show the ruins of the furnaces and their location as they are at present.



Location sketch.



The older furnaces were completed in 1840 and were operated intermittently from that time until about 1870. No.3 furnace was started in 1845 but was never lined and, at the present time, there is not even a stone to mark its position.

#### PRODUCTION.

These furnaces were built with the intention of using the carbonate ores of the Coal Basin, located some miles away, but had to depend on the red "fossil" ore around Mount Savage itself, for their supply. Evidences of these ore deposits having been worked can still be seen on several of the farms in the neighboring country.

From records available, No.2 furnace produced, in 1844, 4500 tons of pig iron on a forty week's blast; while, in 1846, No.1 produced 4529 tons on a forty-four week's blast. This placed these two furnaces in the ranks of the largest in the United States. They were among the first "coke" furnaces of the time and were considered as the ultra in blast furnace construction.

#### LATER HISTORY.

From 1847 until the Civil War these furnaces were run by the Mount Savage Iron Works, when they were closed for the second time. After the war, they were again opened, this time by the Union Mining Co., the last owners. Manufacturing ceased a few years later

and was never again taken up. It is interesting to note, that, at a meeting of the Maryland Ironmasters in 1849, in Baltimore, it was reported that previous to the passage of the tariff in 1846, there were 31 furnaces and 5 rolling mills in Maryland. By 1849, 11 furnaces and 4 rolling mills had closed, due to the surplus production thrown in by English manufacturers. This was one of the factors entering into the failure of the original operatives and subsequent operation by the Mount Savage Iron Works. Previous to this time, pig iron had sold for as high as \$75.00 per ton while the cost of refining scarcely exceeded \$24.00 per ton. A decline in profits or increased profits in the brick business are the only reasons offered for the final shut-down and these reasons are not authentic.

#### CONSTRUCTION AND OPERATION.

These furnaces were of the "steam, hot-blast coke" type, constructed entirely of stone and rectangular in shape. The inside of the original furnaces were lined with fire-brick which was imported from England. The two older furnaces were built in one unit with the entire construction reenforced by  $1\frac{1}{4}$ " stay-rods on the ends of which were bolted circular discs 18" in diameter and weighing about 50 pounds each. The ruggedness of construction can be seen from the preceding pictures which were taken nearly one hundred years later.



The back of the unit was built against a hill. This was the customary method during that period since it facilitated charging the furnace. The furnaces were generally located at some distance from the ore supply, the ore being transported in the familiar dump-cart. A wooden runway was built from the hill to the top of the stack and the ore hauled across and dumped. No.3 furnace was different from the others in that it was built in the open and was intended for derrick charging.

In shape and size, the three were nearly alike. The blast furnace proper was square in shape and built in the form of a stack which tapered toward the top. The furnaces at Mount Savage were 50 feet high and 15 feet wide at the bosh. Material covering the exact size of the older group cannot be found; but from the area covered by the ruins it was approximately 50 ft. by 100 ft. in area and the boiler stack some distance higher than the furnaces. At the front was a brick lined, cavern shaped room; about 20 feet high, the same width and 30 or 40 feet deep. This was the combined engine and boiler room. On either <sup>side</sup> were located the openings to the furnaces and adjoining rooms. Similar openings occurred on the outside. Through these archways were drawn the iron and slag. Running along one side of this room was a 30 inch iron pipe which lead into the furnaces and



supplied the hot steam blast. All that remains of this room can be seen in the accompanying pictures, which show the ports and sections of the blast-pipe.



Directly above this room was the stack supplying the boiler draft. In between the furnaces, were several smaller, pits to enable access to all sides of the furnaces. None of these rooms were over 10 feet in diameter, and being also





Looking down into the  
furnace.



Looking down in the  
boiler stack.

No further records of the furnace construction can be found and, since the process of securing the iron was essentially the same as that of the present time, it is not necessary to go into that phase of the subject. Suffice it to say that the <sup>iron</sup> produced was not of the quality secured to-day; but this was, in a large measure, due to the fossiliferous ore and the lack of modern apparatus and methods. At that time, however, the iron demanded the best in market prices. These historic furnaces which had superseded the old charcoal furnaces



# MOUNT SAVAGE BLAST FURNACE, No.

STATEMENT OF WORK and COST OF IRON for *Week* ending *23 June* 185*6*

	used	charges a	lbs. ea.	Tons
Coke		1005		187.60
Limestone		246	1680	91.30
Ores		253		278.90
	Fossil			161.00
	Cross Cut			31.50
	South Branch			
	Roasted Cinder			22.00
	Clear Spring			214.50
	Scrap Iron			

Pig Iron made      "    "    "    "    "    "    "    "    "    Tons

*84 ~*

Yield of above mixture of Ores  $39\frac{12}{100}$  per cent. or  $2\frac{58}{100}$  tons Ore per ton Iron

Coke	used per ton Iron	2.23	tons a \$	3.00.	-	-	-	-	-	-	6	69
Limestone	" " "	1.08	" a \$	79	-	-	-	-	-	-	-	80
Ores	" " "	Fossil	1.91 tons a \$	3.00	\$	5.73						
		Cross Cut	~ 37	" \$	3.00	\$	1.11					
		South Branch		" \$		\$						
		Cinder	~ 27	" \$	~ 20	\$	0.05				6	89
		Clearspring		" \$		\$						
		Scrap Iron		" \$		\$						
				" \$		\$						
				" \$		\$						

Wages, per time list, inclusive of salary of Manager,

8 331.99 divided by 84 tons . . . . . 3 90-

Coal to Engine	$146 \frac{33}{100}$ tons a	\$ 1.20	divided by	84	Tons	2 09
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Materials, per Store and other accounts, viz; Oil, Tallow, Hemp, Packing Yarn, Steel, Leather, Shovels, Buckets, — 65

Wells, &c., &c. Coopers for Reframing Damages by Fire. 3 04

Cost of one ton Pig Iron	-	-	-	27 1/2
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Original record taken from only remaining records.  
All other records of the company were lost in the great  
Baltimore fire.

Saml. Danks Superintendent.







charcoal furnaces of Colonial days were in turn displaced by the huge and efficient furnaces of the present day.

THE MOUNT SAVAGE ROLLING MILL.



OLD RAIL MILL,  
ERECTED AT MT. SAVAGE, ALLEGANY CO., MARYLAND,  
IN 1843. IN THIS MILL WAS ROLLED, IN 1844, THE FIRST SOLID  
TRACK RAIL MADE IN THE UNITED STATES OF AMERICA.

The above cut is one of the few existing pictures of the Rolling Mill during its period of operation.



## HISTORY.

On the sight of the present Mount Savage Fire Brick Works was located the Mount Savage Rolling Mill, erected by the New York Iron and Coal Company. It was sold along with the blast furnaces operated by the same company, to the Mount Savage Iron Company, later known as the Union Mining Company, as has been previously mentioned in connection with the furnaces. The initial steps to-ward the erection of the mill were taken in 1839; but it was not until 1843 that it was completed. During its early operation, it achieved a nationwide fame for the quality of the railroad rails it produced.

This mill owes its claim to historical recognition because of the fact that, in 1844, the first solid iron railroad rail made in the United States was rolled there. All rails, up to this time, had been made of wood, with strap-iron facing. This rail was, in reality, not solid being of the inverted



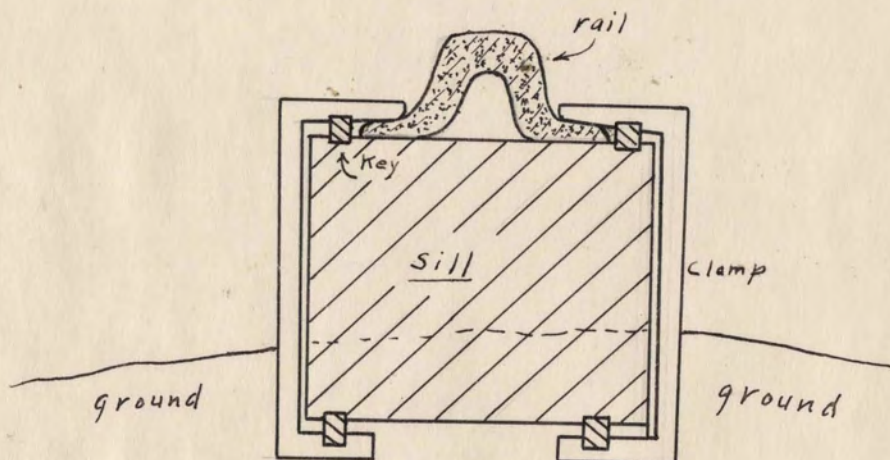
"U" type, and hollow in the center. It weighed 42 pounds to the yard and was known in Wales as the Evan's Patent of the "Dowlais Iron Works" located at Merthyr Tydvil. This rail was intended to be laid on a longitudinal wooden sill to which it was fastened by means of an iron clamp device which keyed under the sill and thus did away with the numerous outside fastenings used in the old type. The following sketch shows a cross-section of the rail and sill and a view of the clamp drawn from written data on the same. A portion of the original rail can be seen in the Baltimore office of the Union Mining Co., located in the Equitable Building of the same city.

In honor of this event, the Franklin Institute of Philadelphia, Pa., awarded the company a silver medal. This was in October of the same year. 1844  
The medal is now a part of the collection in the museum of Ince Blundell of Lancashire England.

Early in 1844, nearly 500 tons of these rails



# Method of Laying Rail





were rolled and laid as a part of the tracks of the Cumberland and Pennsylvania Railroad, then being built from Cumberland to Mount Savage. Later in the same year, the mill produced a "T" rail which weighed 50 pounds to the yard and which were supplied for a special order of Colonel Borden of Fall River, Massachusetts. They were used on the railroad from Fall River to Boston. During the years of 1845 and 1846, through the firm of Manning and Lee of Baltimore, these rails were also sold to other Boston purchasers. The mill continued in operation until 1856. A report of the company for 1855 showed a production of 8350 tons of rails. The mill was dismantled in 1875 to make room for enlargements to the present brick plant.

It is a peculiar thing in the business world that one industry often tends to absorb another. This happened to the iron industry at Mount Savage. Fire-brick lining for the furnaces and mill were



imported from England by the original operators.

While searching for better deposits of ore, they discovered the Savage Mountain vein of fire clay.

A small plant was erected for the manufacture of fire brick to supply the needs of the company, and, as tests proved this clay to be of a superior quality for blast furnace usage, the manufacture of fire brick gradually came to the front with a correspondig decline of the iron industry ending with complete in-operation.

#### CONSTRUCTION AND OPERATION.

The mill contained 37 heating furnaces and 2 trains of steam driven rolls. The furnaces were of the Siemen's type, using coal gas for fuel. The gas producer used the semi- bituminous coal of the George's Creek fields and the gas produced was stored in a receiver known to the populace as "The big egg", because of its shape.

The manufacture of coal gas was at that time an innovation. It consisted primarily of the same



process in use at the present time, namely; the combustion of the coal in a limited supply of air. A report on one of these producers published in 1875, commented on the fact that operation was continuous for months at a time if proper care was used in firing.

Since this mill was built before the "steel era", its product was in the nature of a semi- steel in which one half of the material was pig-iron and the remaining half old scrap rails. This necessitated the process of "puddling" which was done by hand. For this purpose a number of men were employed to stir the iron, as it was heated in the puddling furnace, with long rods. This procedure brought the slag and other impurities to the surface from which it was removed. Mr. Samuel Danks, superintendent of the mill, invented a rotary mechanical "puddler" which was in all probability used at this mill, although no authentic information can be found on the subject other than the fact that it was developed there.



The following from "Hunt's Merchants' Magazine" for the year 1849, will probably give a more interesting account than any present day information could do:-

" An English Company was formed about 15 years ago to manufacture iron, at Mount Savage, but owing partly to mistaken mismanagement, and partly to the alteration of the tariff, they failed in business and about two years ago were sold out by the Sheriff. Their works consist of three blast furnaces, among the largest in the United States, the blast of which is carried on by a monster steam engine, erected at a cost of \$72,000, a puddling furnace and a rolling mill large enough to employ 600 men, a foundry, a fire-brick yard, a store, 320 houses for workmen, etc. \*\*\*\*\* besides iron and coal mines. From the balance sheets of the company, the works appear to have cost \$1,600,000. The whole was sold to a company consisting of citizens of Albany, New York and Boston for a little over \$200,000.



This company is now busy making arrangements to open as soon as the price of railroad iron shall be such as admit of successful competition with the English article. \*\*\*\*\*

The Mount Savage establishment when in operation employs nearly four thousand workmen, mostly foreigners. These men are so banded together among themselves, and with workmen of other establishments that they will remain idle or work at other businesses at one half what the company could afford to give them, rather than abate one cent from their wages. Puddlers, who formerly received \$3.00 to \$5.00 per ton could now earn \$2.50 per ton, but they prefer to work in the mines or on the canal for one half the amount. It is to be hoped that before long a peace in Europe, an alteration of the tariff, or a return of reason on the part of the workmen, will bring the superior article made at Mount Savage into general use on railroads."



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This extract completes the history of the birthplace of an industry which is, to-day, world wide. Born to aid the progress of the railroad, it served its purpose and, after a useless struggle, surrendered to the forces of centralized industry.

#### BIBLIOGRAPHY.

Very little written material has been preserved, especially that relating to the actual construction of these works and this paper is, for the most part, based on the knowledge of those people who were connected in some way with them. Brief articles are to be found in several books and papers relating to the early iron industry, most of this material being found at the Congressional Library in Washington, D.C. There is still sufficient remaining portions of the blast furnaces to substantiate records and information concerning them; but that relating to the Rolling Mill can only be found from written records.

Credit for much of the information in this paper must be given to the following authors and publications:-

"Wiley's American Iron Trade Manual 91874)." Information concerning the Blast Furnaces. Reference to Samuel Danks.



Singewald's "Iron ores of Maryland".

Material covering the entire industry.

Lewis' "Maryland Directory" (1878).

Authentic information of the first rail.

Mr. Charles Geetz of Cumberland.

Original sketch of the Rolling Mill.

All photographs and sketches by the author.



Supplementary Material.

Extracts from deeds recorded in the State of Maryland as a basis for the material in the preceding paper.

Act of 1837 - chap. 218. An act to incorporate the "New York Iron & Coal Company.- Passed March 12, 1838.

"Be it enacted by the General Assembly of Maryland, that Lewis Howell, Benj. B. Howell and Henry W. Howell, and all and every person who shall become associated with them in the manner herinafter described, shall be, and they are, hereby incorporated by the name of the Maryland & New York Iron & Coal Company-.

And be it enacted that the capital stock of said company shall consist of 5000 shares of \$100.00 each, of which the lands and mines of the said Lewis Howell in Allegany County, shall constitute a part, at such price as may be agreed upon between him on the one part, and those who may associate with him and constitute the aforesaid corporation, etc"

The amount of capital stock shall be at no time in excess of 600,000 shares of \$100.00 each"

Transactions showing the first signs of approaching failure.

M. N. Y. Iron & Coal Company to Samuel Semmes, Liber No.-1 folio 778 - June 29, 1846.

"Was standing in need of \$30,000 and the President and Board of Directors thereof, having passed a resolution authorizing the President to negotiate said loan with interest----

Said mortgage included 9 miles of Railroad from Mt. Savage to Cumberland, Md., mines, furnaces, all equipment, horses, mules, all personal property, etc"

Dec. 3, 1846.

Liber 2, folio 212.

Said company to Joseph Weld, Thomas Weld, -- Blundell, John Folliott Powell and Robt. S. Palmer,---

all of the 3072 7/8 acres of land known as Mount Savage, etc

Jan. 8, 1848.

Liber 4, folio 19.

Moses Rawlings, sheriff  
to

John F- Winslow and Erastus Corning.

"Whereas on the 26th day of July, 1847, a certain writ of fieri facias etc.---

----All lands, mills, furnaces, brick yard, etc., except the property to Harriett Weld. (Note: She was the wife of H.T. Weld one of the original owners whom it is said, took the opportunity to transfer some property to his wife before the failure.)

First sheriff's sale on Oct- 7, 1847. No bidders.  
Sold to bidder on Nov. 11, 1847 for \$ 29,512.00.

Jan. 8, 1848.

Liber 4, folio 25.



Moses Rawlings, sheriff  
to  
John M. Forbes

Same as above except the price was \$111,710.00.

Act of 1846. December session---Chap. 297.

"An act to Incorporate the Lulworth Iron Company.  
Passed March 1, 1847.

Samuel Semmes, John G. Lynn, S. Palmer, H.T. Weld,  
Jonathan Guest etc.---

Capital stock \$500,000.00-- - Limit of \$1,000,000.00

Act of 1847 --Chap. 57.

"An act to change the name of the Lulworth Iron Co.  
to the Mount Savage Iron Company--- passed Feb. 7, 1848.

(Author's note: The following extracts list the final  
stage of the evolution of the Iron industry at Mt- Savage and  
its subsequent cessation.)

Act of 1864 ---- Chap. 337.

"An act to incorporate the Union Mining Company of  
Allegany County.---Passed March 10, 1864.

Capital \$1,500,000.00

Feb. 28, 1870.

Liber 30, folio 561.

"Consolidation Coal Company to the Mt- Savage Fire Brick  
and Mining Co. (Note: This was the original firebrick works) all  
of described deed from the Mount Savage Iron Company.

The two companies above mentioned then convey same to  
the Union Mining Company."

Author's Note: The above records may be found in the State  
House at Annapolis, Maryland and serve to validify the statements  
made in the body of this paper.

H. Reford Aldridge.





**"MOUNT SAVAGE"**  
**FIRE BRICK WORKS**  
ESTABLISHED 1841

# UNION MINING COMPANY

OF ALLEGANY COUNTY, MARYLAND

**MOUNT SAVAGE, MD.**

GENERAL OFFICES  
BALTIMORE, MD.

October 13th, 1926.

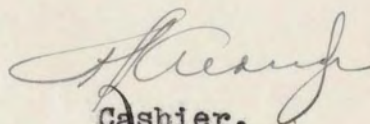
Dean A. N. Johnson,  
University of Maryland,  
College Park, Md.

Dear Sir:-

I enclose you herewith,  
paper which you do kindly sent my son,  
Reford Aldridge, several weeks ago.

I trust this will reach  
you promptly, and wish to thank you  
for your kindness in mailing this to  
him.

Yours very truly,

  
Cashier.

HLA-NMF